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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,855	02/22/2002	Osamu Komuro	N9450.0046/P046	7580

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EXAMINER	
QUASH, ANTHONY G	

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 05/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Application No.	Applicant(s)
10/079 855	KOMURO ET AL

Office Action Summary

Examiner	Art Unit
Anthony Quash	2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2
4)☐ Interview Summary (PTO-413) Paper No(s). _____
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 3 recite the limitation "the models" in line 13 of claim 1 and line 14 of claim 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claims 1 and 3 are rejected as being indefinite and unclear. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, to the extent understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Archie [273] in view of Ausschnitt [578]. As per claims 1, 3,

Archie [273] teaches a process conditions change monitoring system for monitoring changes in exposure and focus conditions by use of electron beam images of the resist patterns, comprising detecting images of resist patterns by using electron beams, detecting dimensional characteristic quantities including edge widths and/or pattern widths of the resist, storing models for establishing logical linking between exposure conditions and dimensional characteristic quantities, and calculating changes in exposure and focus conditions by applying, to the models, those dimensional characteristic quantities. See Archie [273] abstract, figs. 1-4,6A-7, col. 2 lines 1-35, 53-65, columns 3-5, and col. 9 lines 20-67. However, Archie [273] does not specifically teach a dimensional characteristic quantity detection means by which the respective dimensional characteristic quantities of a first pattern portion and a second pattern portion different from one another in the tendency of the changes in dimension characteristic quantities. Archie [273] does however; teach measuring a plurality of dimensions. See Archie [273] col. 3 lines 30-67. In addition, Ausschnitt [578] does teach a dimensional characteristic quantity detection means by which the respective dimensional characteristic quantities of a first pattern portion and a second pattern portion different from one another in the tendency of the changes in dimension characteristic quantities. See Ausschnitt [578] col. 1 lines 20-67, col. 3 lines 35-67, and col. 4 lines 1-65, col. 5 lines 20-67, and col. 6 lines 1-45. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have a dimensional characteristic quantity detection means by which the respective dimensional characteristic quantities of a first pattern portion and a second pattern

portion different from one another in the tendency of the changes in dimension characteristic quantities in order to aid in providing the correct focus to the beam and the correct exposure dosage of the beam to the substrate so as to aid in the manufacturing of microelectronic devices as taught in Ausschnitt [578]. With respect to the applicants' claims regarding an image detection unit, memory, and a calculating unit, both Archie [273] and Ausschnitt [578] teach that the detection and imaging means be provided by a SEM (scanning electron microscopy). See Archie [273] col. 3 lines 5-65, col. 4 lines 1-15, 45-60 and col. 5 lines 1-35. Also see Ausschnitt [578] col. 1 lines 20-67, col. 2 lines 1-15. It is well known in the art that SEM's contain imaging detection means by use of a detector for detecting secondary particles from an object. With respect to the applicants' claim for memory and a calculating unit, Archie [273] specifically teaches the use a processor for programming and the installation of software. See Archie [273] col. 4 lines 45-58. It is well known that processor that can be programmed contain memory and calculating means. In addition, Watanabe [637] is presented as an example of an SEM device that contained the electron beam image detection means, calculation unit, etc. as discussed above.

As per claims 2,4, Ausschnitt [578] teaches correcting exposure conditions according to changes in exposure conditions along with establishing a logical link between exposure levels and dimensional characteristic quantities. See Ausschnitt [578] col. 3 lines 35-67 and col. 4 lines 5-60. Also see Archie [273] col. 4 lines 1-30.

As per claim 5, Ausschnitt [578] teaches correcting the focus according to changes in the focus that have been calculated. See Ausschnitt [578] col. 4 lines 5-40.

As per claim 6, Ausschnitt [578] teaches calculating tolerances on focus deviations and on exposure energy changes. See Ausschnitt [578] col. 4 lines 15-37.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 6,107,637 to Watanabe et al, 5,856,053 to Watanabe, 6,546,125 to Su, 5,976,740 to Ausschnitt et al, and 5,655,110 to Krivokapic et al. are considered pertinent to the applicants' disclosure. Watanabe [637] is considered pertinent because of its teaching a electron beam exposure or system inspection or measurement apparatus and its method and height detection apparatus. It is also pertinent because it is a SEM that contains electron beam image detection means, focus control means, calculation means, correcting means, and a processor, which contains memory. Su [125] is considered pertinent because of its teaching of a method for monitoring the focus-exposure settings of a stepper in a photolithography process. Watanabe [053] is considered pertinent because of its teaching of a method for estimating optimum position of a wafer for forming image patterns thereon. Ausschnitt [740] is considered pertinent because of its teaching of a process for controlling exposure dose or focus parameters using tone reversing pattern. Krivokapic [110] is considered pertinent because of its teaching of a method for setting and adjusting process parameters to maintain acceptable critical dimensions across each die of mass produced semiconductor wafers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Quash whose telephone number is (703)-308-6555. The examiner can normally be reached on M-F from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee, can be reached on (703)-308-4116. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

A. Quash 4/28/03